

## ABSTRACT

The invention relates to genes isolated from *Arabidopsis* that code for proteins essential for seedling growth. The invention also includes the methods of using these proteins to discover new herbicides, based on the essentiality of the genes for normal growth and development. The invention can also be used in a screening assay to identify inhibitors that are potential herbicides. The invention is also applied to the development of herbicide tolerant plants, plant tissues, plant seeds, and plant cells.